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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Stephen J. Brown et al.	) Attorney's Ref.: P213560
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Serial No.: 09/780,316	)
	) Art Unit: 2181
Filed: 02-09-01	)
	)
Title: REMOTE GENERATION AND	)
DISTRIBUTION OF COMMAND	)
PROGRAMS FOR	)
PROGRAMMABLE DEVICES	

Assistant Commissioner for Patents
U.S. Patent & Trademark Office
Washington, D.C. 20231

INFORMATION DISCLOSURE STATEMENT

Sir:

In accordance with 37 CFR §1.56, Applicant respectfully submits this Information Disclosure Statement to call to the attention of the Examiner the references listed on the attached Form PTO/SB/08A for consideration in the prosecution of the above-referenced application for U.S. patent. To reduce the amount of paperwork submitted in this case, the Applicant is not enclosing copies of the U.S. patents cited in this Information Disclosure Statement. If the Examiner is unable to obtain them, the Applicant can provide them at the Examiner's request. Copies of all foreign patents and non-patent literature documents are, however, attached hereto for the Examiner's convenience.

It is believed that no fee is due at this time to maintain the application in full force and effect, however if any such fee is due please charge this to Deposit acct. no. 08-3260.

REMARKS

The references disclosed herein are discussed below.

U.S. Patent No. 5,997,951 (Danieli et al.), issued Nov. 2, 1999, entitled SYSTEM AND METHOD FOR SUBSTITUTING AN ANIMATE CHARACTER WHEN A REMOTE CONTROL PHYSICAL CHARACTER IS UNAVAILABLE. This patent discloses a

system that detects when a remote control character is available and if the character is unavailable, generates an animated character on a display device as a substitute for the remote control character.

U.S. Patent No. 5,746,602 (Kikinis), issued May 5, 1998, entitled PC PERIPHERAL INTERACTIVE DOLL. This patent discloses an interactive system comprising a computer and a personalized object such as a doll. The doll comprises a speaker and a microphone. The voice data entered through the microphone is transferred to the computer and used as the basis for speech data that is transferred back to the personalized object and played over the speaker.

U.S. Patent No. 5,752,880 (Gabai et al.), issued May 19, 1998, entitled INTERACTIVE DOLL. This patent discloses an interactive doll system in which communication is established between a computer and a mechanized doll using a wireless transmission system. A first transmission associated with an operation is transmitted from the computer to the toy. A second transmission containing feedback pertaining to the performance of the operation is transmitted from the toy back to the computer. A subsequent transmission by the computer to the toy is generated depending at least partly on the second transmission received by the computer.

U.S. Patent No. 5,733,131 (Park), issued March 31, 1998, entitled EDUCATION AND ENTERTAINMENT DEVICE WITH DYNAMIC CONFIGURATION AND OPERATION. This patent discloses an entertainment device that uses pager technology to communicate messages to a doll having the appearance of a character on a television show. The doll responds to external stimuli in a manner appropriate to the character's storyline on the television show.

U.S. Patent No. 5,626,994 (Tong), issued June 10, 1997, entitled INTERACTIVE COMPUTER CONTROLLED DOLL. This patent discloses an interactive system comprising a computer and an animated doll. The doll is capable of reproducing audio sounds and moving. Audio signals are transferred from the computer to the doll, and the doll moves in response to the audio signals that are reproduced by the doll. The doll may be provided with a microphone as a speech input device. The speech input from the microphone is used to program the computer.

U.S. Patent No. 5,665945 (Jani), issued August 12, 1997, entitled VIDEO AND RADIO CONTROLLED MOVING AND TALKING DEVICE (PCT WO 94/08677). This patent discloses the use of unused spaced on a standard video tape to store digital control data. Digital control data is converted into an RF signal that is transmitted

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between a radio receiver and a remote device. The remote device is controlled to move and/or make sounds based on the radio signal.

U.S. Patent No. 4,846,693 (Baer), issued July 11, 1989, entitled VIDEO BASED INSTRUCTIONAL AND ENTERTAINMENT SYSTEM USING ANIMATED FIGURE. This patent discloses a system comprising an animating figure operatively connected to a VCR, which is also connected to a conventional television set. Data encoded on the video set controls the doll to create the illusion of the doll having a conversation with characters on the television monitor. A human viewer may also interact with the device to influence the actions and spoken words of the doll.

U.S. Patent 5,873,765 (Rifkin et al.), issued February 23, 1999, entitled TOY HAVING DATA DOWNLOADING STATION. This patent relates to a toy that simulates a worker sitting at her desk. The toy contains a downloading station that receives signals from a computer corresponding to audible phrases. The signals are transferred to the doll from the download station to cause the doll to appear to speak the audio phrases.

U.S. Patent No. 4,809,335 (Rumsey), issued February 28, 1989, entitled SPEECH UNIT FOR DOLLS AND OTHER TOYS. This patent discloses a speech unit for a doll or toy figure. The speech unit includes a gravity sensing means that generates an output corresponding to orientation of the doll with respect to gravity. The speech unit allows audio signals to be generated based on the orientation signal.

U.S. Patent No. 5,846,132 (Junkin), issued December 8, 1998, entitled INTERACTIVE SYSTEM ALLOWING SIMULATED OR REAL TIME PARTICIPATION IN A LEAGUE. This patent discloses a system for allowing participants to compete in an interactive game. The game is constructed to allow the selection and trading of players. The game can be run in real time. Interactive devices may be used to represent game play.

U.S. Patent No. 5,890,963 (Yen), issued April 6, 1999, entitled SYSTEM AND METHOD FOR MAINTAINING CONTINUOUS AND PROGRESSIVE GAME PLAY IN A COMPUTER NETWORK. This patent discloses a plurality of servers and a plurality of clients connected to each other through a communications network. Each server comprises game rules and game data that allows the clients to set up a game environment. The server may store client data that allows the client to re-continue play at a subsequent time.

U.S. Patent No. 5,707,289 (Watanabe et al.), issued January 13, 1998, entitled VIDEO GAME SYSTEM HAVING TERMINAL IDENTIFICATION DATA. This patent

discloses a system for distributing game programs to terminal devices capable of running the programs. Each of the terminal devices is designated by identification data. The video game program comprises start and end packets that contain information identifying which of the terminals is to receive the video game program based on the identification data.

U.S. Patent No. 5,800,268 (Molnick), issued September 1, 1998, entitled METHOD OF PARTICIPATING IN A LIVE CASINO GAME FROM A REMOTE LOCATION. This patent discloses a method for allowing a player to participate in a live casino game from a remote location. The player provides the casino with financial account information. Game information is transferred from the casino to the player, and the player transmits bet and game play information to the casino. Bets are checked, winnings are paid, and losses are debited instantaneously using the account information.

U.S. Patent No. 5,907,831 (Lotvin et al.), issued May 25, 1999), entitled COMPUTER APPARATUS AND METHODS SUPPORTING DIFFERENT CATEGORIES OF USERS. This patent discloses a system that allows parents to establish financial incentives that allow children to accumulate points redeemable towards the purchases of goods and services. Points are awarded based on the completion of educational and cultural enrichment tasks.

U.S. Patent No. 5,801,946 (Nissen et al.), issued September 1, 1998, entitled ASSEMBLY PROMPTING SYSTEM. This patent discloses a system for prompting an operator to take the required steps during assembly of a product. These steps are stored in sequential order on a computer. These steps are transmitted to a remote module worn by the operator capable of translating instructions into audible sounds for prompting the operator.

U.S. Patent No. 4,840,602 (Rose), issued June 20, 1989, entitled TALKING DOLL RESPONSIVE TO EXTERNAL SIGNAL. This patent discloses a narration stored at a remote signal source. The remote signal source sends encoded data to a doll using a radio frequency data transmission system. The doll emits an intelligent or responsive statement based on the remotely generated signal.

U.S. Patent No. 4,857,030 (Rose), issued August 15, 1989, entitled CONVERSING DOLLS. This patent discloses storing in memory a vocabulary comprising words that can be concatenated into phrases. The doll synthesizes speech from the vocabulary data. This synthesized speech is made responsive to positions of

the doll and the like. More than one doll may be provided such that the dolls interact in a simulated conversation. The dolls communicate using an RF signal.

U.S. Patent No. 5,607,3356 (Lebensfeld et al.), issued March 4, 1997, entitled SUBJECT SPECIFIC, WORD/PHRASE SELECTABLE MESSAGE DELIVERING DOLL OR ACTION FIGURE. This patent discloses a doll that receives one of a plurality of message containing components. The doll may be dressed in different outfits of wearing apparel and an appropriate message containing components inserted into the doll based on the selected outfit. The doll contains audio generating means for generating audible messages based on the message containing component inserted therein.

U.S. Patent No. 5,596,994 (Bro), issued January 28, 1997, entitled AUTOMATED AND INTERACTIVE BEHAVIORAL AND MEDICAL GUIDANCE SYSTEM. This patent discloses a system that transfers motivational messages and/or questions to a client to change or reinforce a specific behavioral problem. A database of client unique motivational messages and/or questions is stored. The database is stored on a computer that sends the messages and/or questions to the clients at pre-selected time periods.

U.S. Patent No. 5,377,258 (Bro), issued December 27, 1994, entitled METHOD AND APPARATUS FOR AN AUTOMATED AND INTERACTIVE BEHAVIORAL GUIDANCE SYSTEM. This patent discloses a system that transfers motivational messages and/or questions to a client to change or reinforce a specific behavioral problem. A database of client unique motivational messages and/or questions is stored. The database is stored on a computer that sends the messages and/or questions to the clients at pre-selected time periods.

U.S. Patent No. 4,897,835 (Gaskill et al.), issued January 30, 1990, entitled HIGH CAPACITY PROTOCOL WITH MULTISTATION CAPABILITY. This patent discloses a system for distributing paging messages. The system comprises local clearing houses that store resident subscriber data. Messages are routed to clearing houses which allow the data to be broadcast in the local area if the receiver of that message is located within that area.

U.S. Patent No. 4,713,808 (Gaskill et al.), issued December 15, 1987, entitled WATCH PAGER SYSTEM AND COMMUNICATION PROTOCOL. This patent discloses a system for distributing paging messages. The system comprises local clearing houses that store resident subscriber data. Messages are routed to clearing houses which allow

the data to be broadcast in the local area if the receiver of that message is located within that area.

U.S. Patent Nos. 5,867,385 and 5,691,897 (Brown et al.), issued February 2, 1999 and November 25, 1997, respectively, entitled MOTION CONTROL SYSTEMS. These patents disclose a system for facilitating the creation of hardware independent application programs. Hardware independent driver functions are separated into core and extended driver functions. Software drivers implement at least the core driver functions. The software drivers need not implement the extended driver functions but the system will be optimized when the software drivers do implement the extended driver functions. If the software driver does not contain code to implement one of the extended driver functions, the functionality of the extended driver function is obtained through a combination of core driver functions.

U.S. Patent No. 5,600,373 (Chui et al.), issued February 4, 1997, entitled METHOD AND APPARATUS FOR VIDEO IMAGE COMPRESSION AND DECOMPRESSION USING BOUNDARY-SPLINE-WAVELETS. This patent relates to systems for compressing and decompressing video images in a manner that avoids boundary effect artifacts upon reconstructing the image.

U.S. Patent No. 5,666,161 (Kohiyama et al.), issued September 9, 1997, entitled METHOD AND APPARATUS FOR CREATING LESS AMOUNT OF COMPRESSED IMAGE DATA FROM COMPRESSED STILL IMAGE DATA AND SYSTEM FOR TRANSMITTING COMPRESSED IMAGE DATA THROUGH TRANSMISSION LINE. This patent discloses a system for reducing the size of compressed image data. Frequency components of the compressed image data are deleted to obtain a final image of lower quality but defined by a smaller data file.

U.S. Patent No. 5,790,178 (Shibata et al.), issued August 4, 1998, entitled PICTURE CODEC FOR TELECONFERENCE EQUIPMENT, WHICH FORMS AND DISPLAYS PICTURE-IN-FRAME INCLUDING AT LEAST TWO OF RECEIVED MOTION PICTURE, A RECEIVED STILL PICTURE AND A SELF MOTION PICTURE IN AN OPTIONAL COMBINATION. This patent discloses a system that allows a still picture and video to be simultaneously displayed on a single screen. This system uses a picture in picture processor.

U.S. Patent No. 5,818,537 (Enokida et al.), issued October 6, 1998, entitled IMAGE PROCESSING METHOD AND APPARATUS FOR CONVERTING BETWEEN DATA CODED IN DIFFERENT FORMATS. This patent discloses a system that

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converts data related to images between two different coding formats. The second data format is smaller in size than the first data format.

U.S. Patent No. 5,821,987 (Larson), issued October 13, 1998, entitled VIDEOPHONE FOR SIMULTANEOUS AUDIO AND VIDEO COMMUNICATION VIA A STANDARD TELEPHONE LINE. This patent discloses a method whereby digitized sound and video data are formatted for transmission using a standard full duplex telephone line. An image reproduced at a receiving station is based on an updated image, skipping intervening blurred images that would other wise be caused by the delay.

U.S. Patent No. 5,924,013 (Guido et al.), issued July 13, 1999, entitled METHOD AND APPARATUS FOR TRANSMITTING MOTION PICTURE CINEMATIC INFORMATION FOR VIEWING IN MOVIE THEATERS AND ORDERING METHOD THEREFOR. This patent discloses a system for transferring video images from a central site to a movie theatre. Orders may be placed over a communications network.

U.S. Patent No. 5,960,085 (de la Huerga), issued September 28, 1999, entitled SECURITY BADGE FOR AUTOMATED ACCESS CONTROL AND SECURE DATA GATHERING. This patent discloses a personal identification badge containing circuitry and transceiver components. The badge exchanges digital information with other compatible devices. Access to the compatible devices is based on the information contained in the identification badge.

U.S. Patent No. 5,920,476 (Hennessey et al.), issued July 6, 1999, entitled COMPUTER CONTROLLED MOVEMENT OF STAGE EFFECTS AND STAGE INSTALLATION EMPLOYING SAME. This patent discloses a computer system for controlling stage effects. A computer is operatively connected to one or more stage effects and runs a program that operates the stage effects in a desired sequence. Information is displayed on the computer as the effects are run under the control of the program.

U.S. Patent No. 5,493,281 (Owens), issued February 20, 1996, entitled METHOD AND APPARATUS FOR REMOTE SYNCHRONIZATION OF AUDIO, LIGHTING, ANIMATION AND SPECIAL EFFECTS. This patent discloses a method of synchronizing performance of audio, lighting, animation, and special effects programs at a plurality of remote locations. DTMF tone bursts are transmitted over a radio frequency as a synchronization signal. The tone burst are divided into packets appropriate for the control of special effects programs.

U.S. Patent No. 5,453,933 (Wright et al.), issued September 26, 1995, entitled CNC CONTROL SYSTEM. This patent discloses the use of object oriented design principals to the control of a CNC machine tool control system. Physical devices present at the CNC machine are represented by software objects that may communicate with each other via object oriented messages.

U.S. Patent No. 4,531,182 (Hyatt), issued July 23, 1985, entitled MACHINE CONTROL SYSTEM OPERATING FROM REMOTE COMMANDS. This patent discloses a computerized numerical control system arranged to communicate with a remote computer center. Program commands sent from the remote computer center control the CNC machine. The program commands can be executed in real time or can be stored first in memory.

U.S. Patent No. 4,937,737 (Schwane et al.), issued June 26, 1990, entitled PROCESS TRANSPARENT MULTI STORAGE MODE DATA TRANSFER AND BUFFER CONTROL. This patent discloses an interprocess communication facility that allows for communication of data between at least two processes. A process interface provides a common interface for each communicating process to select one of a plurality of data transfer modes. Data transfer modes selected by one process are independent of the data transfer modes selected by another process. The transfer modes dictate which data access control function controls the use of the storage management services in a manner that is transparent to the communicating processes.

U.S. Patent No. 5,095,445 (Sekiguchi), issued March 10, 1992, entitled DATA COMMUNICATION SYSTEM CAPABLE OF COMMUNICATING ON-LINE WITH COMMUNICATION TERMINAL EQUIPMENT OF A PLURALITY OF TYPES. This patent discloses a data communication system. This system stores function information relating to the terminals of a plurality of parties defining different destinations. The system determines prior to transmission which of the parties is capable of receiving the transmission.

U.S. Patent No. 5,126,932 (Wolfson et al.), issued June 30, 1992, entitled METHOD AND APPARATUS FOR EXECUTING A PROGRAM IN A HETEROGENEOUS MULTIPLE COMPUTER SYSTEM. This patent describes a system for executing a program across multiple computer systems of different types. Execution of the program is initiated on a first autonomous node in the multiple computer system. Execution of the program is transferred to a second autonomous node in response to the program running on the first node.

U.S. Patent No. 5,175,817 (Adams et al.), issued December 29, 1992, entitled DATA REPRESENTATION PROTOCOL FOR COMMUNICATIONS BETWEEN DIFFERENT NETWORKS. This patent discloses a protocol for representing data that allows the communication between two different networks. Information is transmitted between the networks in variable size blocks. Each block contains a header and the actual information to be transmitted. A device in the receiving network analyzes the block header to determine how to process the data in the remaining portion of the block.

U.S. Patent No. 5,245,703 (Hubert), issued September 14, 1993, entitled DATA PROCESSING SYSTEM WITH MULTIPLE COMMUNICATION BUSES AND PROTOCOLS. This patent discloses a computer system in which a control module is connected to internal and external communication buses. An inner device interface within the control module adapts the protocols of the internal and external buses to each other.

U.S. Patent No. 5,247,650 (Judd et al.), issued September 21, 1993, entitled SYSTEM FOR COMBINING ORIGINALLY SOFTWARE INCOMPATIBLE CONTROL, KINEMATIC, AND DISCRETE EVENT SIMULATION SYSTEMS INTO A SINGLE INTEGRATED SIMULATION SYSTEM. This patent discloses a method of connecting dissimilar simulation services to act together to provide a single overall simulation of a system. The interaction between the simulation systems comprises a simulation system that routes messages between the other systems, synchronizes the other systems, and allows each system to operate using its own native programming language.

U.S. Patent No. 5,390,330 (Talati), issued February 14, 1995, entitled CONTROL SYSTEM AND METHOD FOR DIRECT EXECUTION OF SOFTWARE APPLICATION INFORMATION MODELS WITHOUT CODE GENERATION. This patent discloses a system that allows the direct execution of software application information models without code generation. The control system uses an event-action-state machine to manipulate user defined information models and conventional information system program modules.

U.S. Patent No. 5.491.813 (Bondy et al.), issued February 13, 1996, entitled DISPLAY SUBSYSTEM ARCHITECTURE FOR BINDING DEVICE INDEPENDENT DRIVERS TOGETHER INTO A BOUND DRIVER FOR CONTROLLING A PARTICULAR DISPLAY DEVICE. This patent discloses a programming interface for use with a computer graphic system. The interface allows hardware display adapters to be upgraded and enhanced without modifying display specific driver codes. A resource

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library with a standard programming interface is provided for each display adapter. Device driver models are created as necessary to service the graphics model embodied in a program application. Two levels of dynamic binding are implemented to first expose the functionality of the desired display adapter and then bind the program application with the displayed specific code and graphic models being utilized.

U.S. Patent No. 5,604,843 (Shaw et al.), issued February 18, 1997, entitled METHOD AND SYSTEM FOR INTERFACING WITH A COMPUTER OUTPUT DEVICE. This patent discloses a computer system for transmitting data to an output device. The application program corresponds with a graphics device interface. A plurality of mini-drivers are arranged between the graphics device interface and a universal driver in communication with a plurality of output devices. The mini-drivers implement functions that control the outputting of data to the output device by invoking functions of the universal driver. Certain mini-driver functions invoke an analogous function of the universal driver. Each analogous function accesses the scored attributes and performs the behavior of the analogous function to affect the control and output device.

U.S. Patent No. 5,608,894 (Kawakami et al.), issued March 4, 1997, entitled EXECUTION CONTROL SYSTEM. This patent discloses a system controlling the execution of software components. When any of the software components issue execution request information, software components refer to shared reference information containing procedure information. The control means refers to the shared reference information when execution request information is issued. The control means further combines software components and controls the execution of the combined necessary software components.

U.S. Patent No. 5,168,441 (Onarheim et al.), issued December 1, 1992, entitled METHODS FOR SET UP AND PROGRAMMING OF MACHINE AND PROCESS CONTROLLERS. This patent discloses the use of graphical editing methods to construct programs in high level graphical languages. The programs so constructed are used in the operation of controllers for industrial and commercial equipment. The hardware environment is simulated using two layered icons. The control program can be in languages such as function block, sequential function chart, and ladder diagrams.

U.S. Patent No. 5,392,207 (Wilson et al.), issued February 21, 1995, entitled PROGRAMMABLE MOTION CONTROLLER WITH GRAPHICAL PROGRAMMING AID. This patent discloses a graphical programming aid for creating motion control programs. Functionally related groups of instructions are represented by icons and interconnected

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by sequence lines to indicate the order of execution. A displayed icon is modified to indicate that the instructions represented thereby are being run.

U.S. 5,412,757 (Endo), issued May 2, 1995, entitled FUZZY CONTROL SYSTEM. This patent discloses a fuzzy control system that employs a plurality of internal states expressed by a plurality of membership functions and an input value and a control value. The state of an object to be controlled is then determined. The internal state of the control system is altered using fuzzy inference, and a decision result is stored as a new internal state. The object is controled based on the new internal state and the input value.

U.S. Patent No. 5,465,215 (Strickland et al.), issued November 7, 1985, entitled NUMERICAL CONTROL METHOD AND APPARATUS. This patent discloses a system that graphically assists input data relating to machine control. Instructions are generated based on a predetermined programming convention in response to operator selection of icons and numeric data input. The instruction blocks may be executed one at a time.

U.S. Patent No. 5,907,704 (Gudmundson et al.), issued May 25, 1999, entitled HIERARCHICAL ENCAPSULATION OF INSTANTIATED OBJECTS IN A MULTIMEDIA AUTHORING SYSTEM INCLUDING INTERNET ACCESSIBLE OBJECTS. This patent discloses an application development system optimized for use in authoring multimedia titles. Reusable objects may be created by defining links among other objects. The system automatically isolates the external dependencies of the object containers. The objects are categorized as either elements or modifiers. Objects automatically receive messages sent to them in view of the object container. This system facilitates the construction of multimedia titles from objects distributed throughout a local or wide area network.

U.S. Patent No. 5,914,876 (Hirai), issued June 22, 1999, entitled NUMERICAL CONTROLLER HAVING EXPANDED CONTROL WORD SET. This patent discloses a system for generating control commands for use by a numerical controller. The control commands are embodied as control words, and the set of control words is expanded using one or more sub-words that are added to the conventional control words. The combination of control words and sub-words can uniquely specify each axis of the machine and each function that may be performed by the machine.

U.S. Patent No. 5,855,483 (Collins et al.), issued January 5, 1999, entitled INTERACTIVE PLAY WITH A COMPUTER. This patent discloses a system for allowing interactive play with a computer. A transceiver allows two way communication between

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the computer and a plaything. A fantasy play program is stored at the plaything and uses information received from the computer to allow the plaything to provide interactive fantasy simulation.

U.S. Patent No. 4,159,417 (Rubincam), issued June 26, 1979, entitled ELECTRONIC BOOK. This patent discloses a device that reads the contents of a book, a magazine, or the like from a removable memory unit. The contents of the memory unit are displayed in visual form on a screen or the like.

U.S. Patent No. 4,7676,334 (Thorne et al.), issued August 30, 1988, entitled EDUCATIONAL AND RECREATIONAL TOY VEHICLE. This patent discloses a toy craft representing a commander's cabin. Simulated control devices are connected to attitudinal instruments through an analogue computer such that the attitudinal instruments are changed by the controls.

U.S. Patent No. 4,855,725 (Fernandez), issued August 8, 1989, entitled MICROPROCESSOR BASED SIMULATED BOOK. This patent discloses an electronic book device. Infrared transceivers are used to connect the electronic book device to a personal computer that allows the contents of a CD ROM to be downloaded to the book device.

U.S. Patent No. 4,887,966 (Gellerman), issued December 19, 1989, entitled FLIGHT SIMULATION CONTROL APPARATUS. This patent discloses a flight simulation control apparatus adapted to be connected to a personal computer. The system connects a control yoke commonly used in an aircraft to flight simulation software running on the computer.

U.S. Patent No. 5,120,065 (Driscoll et al.), issued June 9, 1992, entitled ELECTRONIC TALKING BOARD GAME. This patent discloses a board game incorporating an electronic computer system. The computer system is configured to play audio sounds representing speech information of the players. The computer system also reads cards used as part of the game play.

U.S. Patent No. 5,402,518 (Lowry), issued March 28, 1995, entitled SOUND STORAGE AND SOUND RETRIEVAL SYSTEM HAVING PERIPHERAL WITH HAND OPERABLE SWITCHES. This patent discloses a hand held device that is used to record and play back sound into a computer. The hand held device compresses the sound data before it is sent to the computer.

U.S. Patent No. 5,450,079 (Dunaway), issued September 12, 1995, entitled MULTIMODAL REMOTE CONTROL DEVICE HAVING ELECTRICALLY ALTERABLE

KEYPAD DESIGNATIONS. This patent discloses a remote control device for selecting functions of a multimedia processing unit. Icons are associated with the keypad.

U.S. Patent No. 5,670,992 (Yasuhara et al.), issued September 23, 1997, entitled PORTABLE GRAPHIC COMPUTER APPARATUS. This patent discloses a tablet that allows the user to input and store video image data. This system generates musical scale or sound volume based on coordinates of the tablet.

U.S. Patent No. 5,852,441 (Nakajima et al.), issued December 22, 1998, entitled SHELL EXTENSIONS FOR AN OPERATING SYSTEM. This patent discloses a system for allowing application developers to extend the capabilities of shell of an operating system.

U.S. Patent No. 5,822,207 (Hazama et al.), issued October 13, 1998, entitled APPARATUS AND METHOD FOR INTEGRATING INTELLIGENT MANUFACTURING SYSTEM WITH EXPERT SHEET METAL PLANNING AND BENDING SYSTEM. This patent discloses a system for integrating a manufacturing system with a planning system used with the sheet metal bending machine. An expert system proposes a bending plan that includes a bend sequence, tooling selections, and robot motion planning and repositioning.

U.S. Patent No. 5,737,523 (Callaghan et al.), issued April 7, 1998, entitled METHODS AND APPARATUS FOR PROVIDING DYNAMIC NETWORK FILE SYSTEM CLIENT AUTHENTICATION. This patent discloses a system for authenticating client access to a network file system. Authentication of the client is based on factors such as time, date, client identity, the nature of the request, and resource status.

U.S. Patent No. 5,652,866 (Aldred et al.), issued July 29, 1997, entitled COLLABORATIVE WORKING METHOD AND SYSTEM FOR A TELEPHONE TO INTERFACE WITH A COLLABORATIVE WORKING APPLICATION. This patent discloses a network control layer for controlling the physical routing of data between network nodes.

U.S. Patent No. 4,418,381 (Molusis et al.), issued November 29, 1983, entitled SINGLE LOOP CONTROL SYSTEM. This patent discloses a control instrument that can operate with any one of several different types of controllers. The control instrument contains memory that stores programs associated with the types of controllers. The control instrument further comprises a control panel having a second microprocessor separate from the microprocessor that runs the program associated with the controller types.

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U.S. Patent No. 5,764,155 (Kertesz et al.), issued June 9, 1998, entitled DYNAMIC DATA EXCHANGE SERVER. This patent discloses the use of a dynamic data exchange server to allow external programs to access power management data. This system cross references item numbers with alpha numeric names to allow a user to retrieve data without knowledge of the item number.

U.S. Patent No. 5,617,528 (Stechmann et al.), issued April 1, 1997, entitled METHOD AND APPARATUS FOR INTERACTIVELY CREATING A CARD WHICH INCLUDES VIDEO AND CARDHOLDER INFORMATION. This patent discloses a system for creating printed cards. This system uses layout frames for video picture and cardholder information fields to be printed.

U.S. Patent No. 5,828,575 (Sakai), issued October 27, 1998, entitled APPARATUS AND METHOD FOR MANAGING AND DISTRIBUTING DESIGN AND MANUFACTURING INFORMATION THROUGHOUT A SHEET METAL PRODUCTION FACILITY. This patent discloses a system for managing and distributing design and manufacturing information throughout a factory.

FOREIGN PATENTS

European Patent No. 0 508 912 A1. This patent is in French.

European Patent App. 0 275 826; pub. July 27, 1988. This application discloses a control system for electromechanical devices. The control system includes software that allows users to select preprogrammed sequences or to program unique sequences. User access privileges are set based on classes of users. Unique program sequences can be programmed at a high level of complexity and an expert level of complexity. At the expert level, a plurality of commands are arranged as a macro.

European Patent App. 0 442 676 A2; pub. August 21, 1991. This patent application discloses a system to allow hardware display adapters to be upgraded and enhanced without rewriting driver specific code. A resource library using a standard interface but specific to each display adapter is created.

PCT App Pub No WO 95/07504; pub. March 16, 1995. This patent discloses a machine tool control system that uses software objects to represent real world machine tool objects.

European Patent App. 0 281 427 B1; pub. May 8, 1992. This patent discloses a radio controlled toy system in which the camera is included in the radio controlled toy.

Video signals generated by the camera are transmitted back to a display so that the operator can view what the camera sees while controlling the toy.

European Patent App. 0 583 908 A2; pub. February 23, 1994. This patent discloses a system for capturing, controlling, and displaying information seen on an image capture device.

Japanese publication 59-228473. This patent is in Japanese.

UK Patent App. GB 2 244 896 A; pub. December 11, 1991. This patent discloses a system for displaying video images.

PCT App. WO 92/11731; pub. July 9, 1992. This patent discloses a camera device that prints out a digital image without storing the digital data.

PCT Patent App WO 93/08654; pub. April 19, 1993. This patent discloses a wireless system for transmitting data among a computer and one or more peripheral devices. Channel codes are used to determine which device is to receive a transmission.

The following documents disclose high-level software programs for developing motion control programs: (a) Software Products For Industrial Automation, iconics 1993; (b) The complete, computer-based automation tool (IGSS), Seven Technologies A/S; (c) OpenBatch Product Brief, PID, Inc.; (d) FIX Product Brochure, Intellution (1994); (e) Paragon TNT Product Brochure, Intec Controls Corp.; (f) WEB 3.0 Product Brochure, Trihedral Engineering Ltd. (1994); and (g) AIMAX-WIN Product Brochure, TA Engineering Co., Inc.

The following documents disclose motion control simulation software: (a) ExperTune PID Tuning Software, Gerry Engineering Software; and (b) XANALOG Model NL-SIM Product Brochure, XANALOG.

The following documents relate to low-level, hardware dependent motion control programs: (a) Compumotor Digiplan 1993-94 catalog, pages 10-11; (b) Aerotech Motion Control Product Guide, pages 233-34; (c) PMAC Product Catalog, page 43; (d) PC/DSP-Series Motion Controller C Programming Guide, pages 1-3; (e) Oregon Micro Systems Product Guide, page 17; (f) Precision Microcontrol Product Guide.

The Applicants are also aware of a software model referred to as WOSA that has been defined by Microsoft for use in the Windows programming environment. The WOSA model is discussed in the book Inside Windows 95, on pages 348-351. WOSA is also discussed in a paper entitled WOSA Backgrounder: Delivering Enterprise Services

to the Windows-based Desktop. The WOSA model isolates application programmers from the complexities of programming to different service providers by providing an API layer that is independent of an underlying hardware or service and an SPI layer that is hardware independent but service dependent. The WOSA model has no relation to motion control devices.

The Applicants are also aware of the common programming practice in which drivers are provided for hardware such as printers or the like; an application program such as a word processor allows a user to select a driver associated with a given printer to allow the application program to print on that given printer. While this approach does isolates the application programmer from the complexities of programming to each hardware configuration in existence, this approach does not provide the application programmer with the ability to control the hardware in base incremental steps. In the printer example, an application programmer will not be able to control each stepper motor in the printer using the provided printer driver; instead, the printer driver will control a number of stepper motors in the printer in a predetermined sequence as necessary to implement a group of high level commands. The software driver model currently used for printers and the like is thus not applicable to the development of a sequence of control commands for motion control devices.

The Applicants are additionally aware of application programming interface security schemes that are used in general programming to limit access by high-level programmers to certain programming variables. For example, Microsoft Corporation's Win32 programming environment implements such a security scheme. To the Applicants' knowledge, however, no such security scheme has ever been employed in programming systems designed to generate software for use in motion control systems.

Additional literature references disclosed herein are discussed below.

• Chapter 27 of a book entitled "Computer Numerical Control: Essentials in Programming and Networking", by Sue Chen, Jonathon Lin. Part 5 discloses connecting motion-controlled devices (NC or CNC units) over a network. In particular, §27.2 of this reference discloses the use of a local area network to connect across a network such devices as computers, CNC machines, programmable logic controllers, robots, data collection instruments, vision systems, and barcode readers.

• "Open System Controllers: Challenge for the Future of the Machine Tool Industry", by Pritschow et al., published January 15, 1993. This document discloses an

open system architecture for connecting machine tools. Rather than allowing an application writer to write one program, he's capable of controlling multiple hardware standards, this paper advocates the specification of an open control system, agreed upon by machine tool and control manufacturers.

- "What Is an Open Architecture Robot Controller", by William E. Ford, published August 16, 1994. This reference provides a view of open architecture systems available or under development at the time of publication of the article. The author's conclusion was that the open architecture systems described in the paper define individual module functionality and thus do not provide the system integrator with flexibility to develop new or different modules as the need arose. The author thus advocates a communication-based philosophy that defines the means of communication and the module interfaces, and lets the system integrator choose or invent modules to fulfill the required functionality. The author concludes that a completely open architecture would be difficult to implement because of rapid evolution of technology.

- "A New Solution for Integrating Control Devices Involved in Computer-Integrated Manufacturing", authored by Marcos et al., published September 2, 1996. This paper describes the communication via network of control equipment such as PLCs, CNCs, or robot controllers, as being well established. This paper notes that many factories employ control devices that cannot or do not take advantage of international standards. This paper describes the use of a translator module to generate code for a particular machine based on an application file containing source code.

- "Development of a Practical SFC System for CNC Machine Shop", by Chu and Wang, published 1994. This paper discloses the connection of a plurality of CNC machines, each having its own personal computer, to a LAN that connects the CNC machines to a host computer. The software system disclosed employs a machine operation control module and a system control module.

- "The Microsoft Object Technology Strategy", published March 1994. This document discloses the structure of Microsoft's OLE technology. In particular, this paper indicates that the OLE technology is intended to facilitate the communication between components across application and machine boundaries, and in particular, across a network.

- "Open Systems: Technology, Leadership, and Collaboration", published March 1994. This Microsoft paper contains an overview of OLE 2.0 and states that OLE 2.0-enabled applications running on separate machines may inter-operate across a network.

"Microsoft OLE Today and Tomorrow: Technology Overview", created December 1993. This document discusses that OLE 2.0 includes the ability for objects to communicate over a network.

"Object Linking and Embedding 2.0 Backgrounder", published September 1993. This Microsoft document introduces OLE 2.0 as a system for hiding the complexity of networks from the users.

"SMART: A Modular Architecture for Robotics and Teleoperation", by Robert Anderson, dated 1993. This document discloses an architecture for controlling any robot that accepts external position set points. Each dynamic element is assigned a distinct module, and the modules can run asynchronously and distributed over a network connecting multiple CPUs and attached processors.

"Validation of Standard Interfaces from a Machine Control", by Proctor et al., published 1996. This paper discusses the development of an enhanced machine controller program to develop a modular definition of components for machine control. This paper discusses the use of a task sequencer whose logic contains machine configuration information, with one component for implementing motion control of the rotary axis, and another for implementing motion control of the three Cartesian axes.

"Design and Analysis of a Modular CNC System", published March 4, 1990, by Altintas et al. This document discloses a modular research CNC system that allows the integration of additional monitoring and control modules.

"Open Architecture Manufacturing: The Impact of Open-System Computers on Self-sustaining Machinery and the Machine Tool Industry", by Wright et al. This paper describes the desirability of an open system based on industry standards for computer equipment, hardware, and software applications.

"Open Architecture Controllers", by Protoctor et al., published June 1997. This paper discloses the problems associated with proprietary motion control machines. This paper also describes efforts to create standards that allow the manufacturer of open architecture machines.

"OSACA – The Vendor-Neutral Control Architecture", by Lutz et al., published December 1997. This reference discloses defining a system platform and application program interface through which an application accesses the system platform. The system platform comprises a reference architecture, which describes the functionality offered by application modules and additional rules that allow interoperability between application modules from different vendors.

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"A Generalised Software Control System for Industrial Robots", by Morales et al., published in 1998. This reference describes a software architecture that defines a scalable, modular, and open system for controlling any type of industrial manipulator. The system designed in this reference employs a local terminal directly connected to the CNC, as well as remote hosts connected over a network.

"Distributed Control of a Multiple-Tethered Mobile Robot System for Highway Maintenance and Construction", by Feng et al., published November 1997. This article appears to disclose a robot system, specifically adapted for use in highway maintenance and construction. The robots are connected to a host using a communications network.

"IRL-Based Expansion of the Commonly Used High-Level Language C for Robot Programming", by Fedrowitz, published October 1995. This document appears to disclose a software specification that allows applications to be written in one language (CROB). The CROB program is then translated into C, which is then translated into IRDATA. The IRDATA code is then converted into a robot-dependent controller language.

"Validation Results of Specifications for Motion Control Interoperability", by Szabo et al., published 1997. This paper discloses the requirements of an industry-standard specification for machine controllers.

"Development and Implementation of an Application Programming Interface for PC/DSP-based Motion Control System", by Chang, et al., published 1998. This reference discloses a motion control system having an application programming interface designed to facilitate open architecture code development.

"Open System Architecture Modular Tool Kit for Motion and Machining Process Control", by Errol et al., published September 2000. This paper defines a system having a vendor-neutral architecture and is designed to operate in a distributed system. This paper discloses the use of an open-host system using a hierarchy of DSP drivers and a generic DSP interface to allow the use of DSP boards from different vendors.

"ORiN: Open Robot Interface for the Network: A Proposed Standard", by Mizukawa et al., published May 2000. This paper discloses a system having a unified access method that allows robots from different vendors to be managed using a common application by building a common API. This paper does not discuss the details of the API.

"A Framework for Component-base CNC Machines", by Michaloski et al., published November 1998. This paper discusses the desirability of an open architecture

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standard that allows integrators to mix and match components from different vendors and build using the best value components. The system architecture decomposes an application into individual modules and highlights the static relationship between the modules.

, "A Three-layer Workcell Control Architecture Design", by Bouzouia et al., published May 1998. This paper discloses a system for supervising high-level tasks within a robotics Workcell. The supervisor system selects and configures Workcell devices and defines the task to be performed by the devices. An online task planner scheduling module schedules actions to be performed given the state of the Workcell. A monitoring module comprises a supervisor level, a local controller level, and a station level between the supervisor and local controller levels. The system also employs a system for interprocess communication based on TCP/IP.

⬝ "GENERIS: The EC-JRC Generalised Software Control System for Industrial Robots", by Morales et al., published 1999. This paper describes a software package that is hardware-independent. This system employs a layered software architecture to isolate high-level program definitions from low-level hardware requirements.

⬝ "Mechatronic Objects for Real-time Control Software Development", by Muir et al., published November 1998. This paper teaches the use of abstract Mechatronic objects arranged between control and application code and the device drivers associated with computing hardware.

⬝ "A Compact/Open Network-based Controller Incorporating Modular Software Architecture for a Humanoid Robot", by Cho et al., published 1999. The paper proposes an open control architecture design robot controller. This paper defines a standardized application program interface comprising a primitive module that issues commands to vision/motion sub-controllers, it will control modules that control sequential/concurrent flow in executing the action plans, and other goal modules.

⬝ "A One-stop Solution in Robotic Control System Design", by Ge et al., published September 2000. This paper discloses a software system comprising a robot module, a trajectory planning module, and a controller module. These modules interoperate to allow simulation study and real-time control of robotic control systems.

⬝ "A Friendly Command, Control, and Information System for Astronomy", by McGraw et al., published 1996. This paper discloses an astronomy-specific robotic system that employs an abstract model of astronomy hardware to facilitate automation of this hardware.

• "Robotic Control Using Sequential Function Charts", by Jackman, published 1996. This paper discusses defining a generic set of perimeter actions that can be performed. Table 1 of this paper illustrates tasks and associated data requirements.

• "De-facto Standard API for Open and Networked Industrial Robots", by Mizukawa et al., published October 1999. This article proposes defining an open network robot architecture and associated application programming interface. In particular, client applications are written for an API implemented in the form of a server module having a kernel layer and a provider layer. The kernel layer defines abstract robot access objects, while the provider layer appears to find drivers associated with particular vendor controllers.

• "A Telemanufacturing Workcell over the Internet", by Leu et al., published November 1998. This paper discloses the use of a standard set of protocol defined based on the exposed set of functions associated with robotic arms.

"Robust Hybrid Force/Position Control with Experiments on an Industrial Robot", by Natale et al., published September 19, 1999. This paper discloses the use of a hybrid force/position control paradigm.

"Integrated Architecture for Industrial Robot Programming and Control", by Nilsson et al., published December 31, 1999. This paper discloses a framework for robot control. This paper suggests using abstraction to enhance robot-programming capabilities. This patent recognizes the different levels of expertise of various users of robotics systems. This system employs layers of software that hopefully optimize flexibility and efficiency.

• "Interactive Online Evaluation of Robot Motion Control", by Valera et al., published August 22, 1999. This paper discloses an open control system for robots that employs graphically edited software blocks for creating applications.

"NEMI Low-cost Controller Project", dated December 1996. This document appears to disclose a specification for an API for machine control. The common API resides between an application (or reasonable application modules) and a vendor-specific implementation of controller software. This API apparently requires the vendor to construct the motion controller to conform to the API.

"Designing Applications for an OSACA Control", by Sperling, dated November 16, 1997. This paper discloses an application programming interface that defines the external behavior of software modules. Ideally, the application programmer programs to the API without knowledge of the underlying motion control hardware.

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"OSACA: The Vendor-neutral Control Architecture", by Lutz et al., published 1997. This reference discloses and application programming interface, including a data interface providing access to internal data, and a process interface that defines the dynamic behavior of an application module.

"Enabling Open Control Systems: An Introduction to the OSACA System Platform", by Sperling et al., published May 1996. This architecture comprises application modules (called "architecture objects") that interface with a standardized API. The API handles communication between the application modules and the motion control hardware, as well as communication between the modules themselves. An important aspect of the overall system is a configuration system that generates the actual topology of the software upon boot-up of the system.

"Requirements of Open Modular Architecture Controllers for Applications in the Automotive Industry", dated December 13, 1994. This document defines the requirements of an open modular architecture controller so that vendors of such controllers can meet the needs of the end users. This paper defines a controller consisting of core modules and application programming interface modules. The core modules include a real-time kernel, a database, and graphical user interface. The application programming interface modules accept APIs that may be integrated into the controller without reprogramming the controller. This document presumes that hardware controllers will be required to meet the interface standard.

"Open, Modular Architecture Controls a at GM Powertrain", dated May 14, 1996. This document describes an open, modular architecture controller used by General Motors. This paper defines the open modular architecture controller as providing an infrastructure defining a number of APIs that are directed to specific motion-control functions. The infrastructure connects together application modules and device drivers associated with motion-control hardware.

"Validation of Standard Interfaces for Machine Control", by Proctor et al., published December 6, 2000. This paper discusses the characteristics of and standards for evaluation of application programming interfaces for motion control.

"Technologies Enabling Agile Manufacturing (TEAM) Intelligent Closed Loop Processing", published January 11, 1996. This document discloses a standard application programming interface for motion control. This API includes a part-program interpreter that translates part-programs into control sequences. This system also

includes a task coordinator for sequencing operations and related processes, and a communications module for local area and sensor communications.

This Section includes U.S. Patents that require the Applicant to establish a date of invention for the present invention before the prior art status of these references can be determined. The Applicant reserves the right to, if possible, at a later time establish a date of invention of the subject matter claimed in the present application prior to the filing date of one or more of the references cited in this section. The citation of these references below is thus not an admission that these references are prior art to the present invention.

U.S. Patent No. 6,078,968 (Lo et al.), issued June 20, 2000, entitled PLATFORM-INDEPENDENT COMMUNICATIONS PROTOCOL SUPPORTING COMMUNICATIONS BETWEEN A PROCESSOR AND SUBSYSTEM CONTROLLER BASED ON IDENTIFYING INFORMATION. This patent discloses a hardware independent communications protocol in which a host computer issues an identifier and a command to a sub-system controller. The command is identified as a protocol command based on the identifier. The sub-system controller performs an action if the command is identified as a protocol command. If not, the command is passed to a device controlled by the subsystem controller.

U.S. Patent No. 6,209,037 B1 (Brown et al.), issued March 27, 2001, entitled MOTION CONTROL SYSTEMS USING COMMUNICATION MAP TO FACILITATING COMMUNICATION WITH MOTION CONTROL HARDWARE. This patent discloses a system for facilitating communication from a source of control commands for a motion control system to the motion control hardware of that system. The communication system includes a communication map that allows common functions to be used across a plurality of supported hardware device implementations.

U.S. Patent No. 6,139,177 (Vendatraman et al.), issued October 31, 2000, entitled DEVICE ACCESS AND CONTROL USING EMBEDDED WEB ACCESS FUNCTIONALITY. This patent discloses a system that allows control of a device over a communications network. A web page is established for the device. The web page allows selection of at least one control function associated with the device. The device web page may be accessed remotely using a web browser. The controlled functions available for the device include the downloading of new information to the device from a remote web server also connected to the communications network.

U.S. Patent No. 6,216,173 B1 (Jones et al.), issued April 10, 2001, entitled METHOD AND APPARATUS FOR CONTENT PROCESSING AND ROUTING. This patent relates to the efficient transmission of data over a network. This system optimizes data transmission by selecting available transmission channels and the needs of the service being supported. This system evaluates the content and requirements of the data to be transferred and chooses to appropriate transmission channel.

U.S. Patent No. 6,144,895 (Govindaraj et al.), issued November 7, 2000, entitled SYSTEM AND METHOD FOR NETWORKING A COMPUTER NUMERICAL CONTROL WITH A WORKSTATION. This patent discloses the use of a network to connect the plurality of CNC machines to a plurality of man-machine interfaces configured to communicate with the CNC machines.

CONCLUSION

The Applicant respectfully submits that the cited references in this case, taken alone or in combination, neither anticipate nor render obvious the present invention. Consideration of the foregoing in relation to the pending application is respectfully requested. If there is any matter which needs attention, and if the Examiner feels that consultation with the applicant's attorney, the undersigned herein, would be of value, then such consultation would be welcome. The applicant's attorney can be reached at the phone number noted below.

Signed at Bellingham, County of Whatcom, State of Washington, this Friday, February 15, 2002.

Respectfully submitted,
STEPHEN J. BROWN ET AL.

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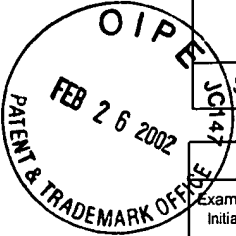
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	Application Number	09/780,316
	Filing Date	02-09-01
	First Named Inventor	Stephen J. Brown
	Group Art Unit	
	Examiner Name	
Sheet	1	of	10	Attorney Docket Number	P213560

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[2]	U.S. Patent Document Number	Kind Code[2]	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
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			EP0508912 A1		European Patent Office	10-14-1992		
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Sheet **2** of **10**	Attorney Docket Number	P213560

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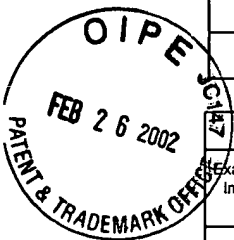
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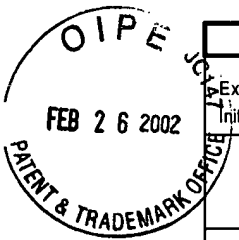
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	Application Numb r	09/780,316
	Filing Dat	02-09-01
	First Named Inventor	Stephen J. Brown
	Group Art Unit	
	Examiner Name	

Sheet 4	*of* 10	Attorney Docket Number	P213560

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Examiner Initials*	Cite No.[2]	U.S. Patent Document Number	Kind Code[2]	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
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	Application Numb r	09/ 213,560
	Filing Date	02-09-01
	First Nam d Inventor	Stephen J. Brown
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	First Nam d Inventor	Stephen J. Brown
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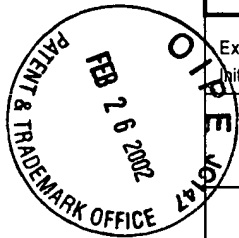| Examiner Signature		Dat Considered	

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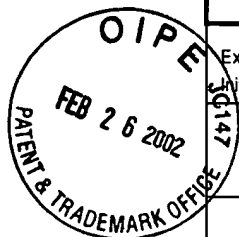Approved for use through 10/31/2002. OMB 0651-0031
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